Claims

What is Claimed Is:

1. A pharmaceutical composition comprising:

a therapeutically effective amount of a drug;

a solubilizer; and

a release modulator;

wherein the release of the drug and solubilizer are synchronized.

2. The pharmaceutical composition of Claim 1, wherein the drug is pioglitazone, zafirlukast, simivastatin, atorvastin or fenofibrate.

3. The pharmaceutical composition of Claim 1, wherein the drug is cilostazol.

4. The pharmaceutical composition of Claim 1 or Claim 3, wherein the solubilizer is a polyoxyethylene-polyoxypropylene block copolymer, a cyclodextrin or cyclodextrin derivative, a fatty acid derivative, a tocol derivative or mixtures thereof.

5. The pharmaceutical composition of Claim 4, wherein the tocol derivative is a α-tocopherol ester, a polyethoxylated α-tocopherol ester or mixtures thereof.

6. The pharmaceutical composition of Claim 4, wherein the tocol derivative is α-tocopherol, α-tocopherol acetate, α-tocopherol nicotinoate, α-tocopherol succinate, α-tocopherol polyethyleneglycol succinate, α-tocopherol polyethyleneglycol (200-8000 MW) succinate, α-tocopherol polyethylene glycol 400

succinate, α-tocopherol polyethyleneglycol 1000 succinate, dl-α-tocopherol polyethyleneglycol 1000 succinate, d-α-tocopherol polyethyleneglycol 1000 succinate or mixtures thereof.

7. The pharmaceutical composition of Claim 4, wherein the fatty acid derivative is an ester with glycerol, propylene glycol, sorbitol, sucrose, glucose, polyethylene glycol, an alpha-hydroxy acid or mixtures thereof.

8. The pharmaceutical composition of Claim 4, wherein the ester is a polyoxyl castor oil derivative, a PEG-8 caprylic/capric glyceride, a polysorbate, sorbitan monooleate, a medium chain mono-, di-, or triglyceride, a acetylated monoglyceride, a linoleoyl monoglyceride, a lauroyl macrogol-32glyceride or mixtures thereof.

9 The pharmaceutical composition of Claim 1 or Claim 3 wherein the release modulator is an osmotic pump, a slowly dissolving salt of complex, an erodible matrix, an exchange resin, a wax, an insoluble carrier, a polymeric matrix, a polymeric coating, a fatty acid, a fatty alcohol, a fatty acid derivative, a fatty alcohol derivative or a tocol derivative.

10 The pharmaceutical composition of Claim 9 wherein the release modulator is a polymeric matrix, a polymeric coating, a wax, a fatty alcohol, a fatty acid, a fatty alcohol derivative, or a fatty acid derivative, a tocol derivative or mixtures thereof.

11 The pharmaceutical composition of Claim 10 wherein the polymeric matrix or polymeric coating is a cellulose derivative, an acrylic polymer, a polyvinylpyrrolidone copolymer, shellac, polyvinyl acetate phthalate, a high molecular weight polysaccharide gum or mixtures thereof.

12 The pharmaceutical composition of Claim 9 wherein the tocol derivative is α-tocopherol, α-tocopherol acetate, α-tocopherol nicotinoate, α-

tocopherol succinate, α-tocopherol polyethyleneglycol succinate, α-tocopherol polyethylene glycol 400 succinate, or mixtures thereof.

13 The pharmaceutical composition of Claim 9 wherein the release modulator is microcrystalline wax, hydrogenated vegetable oil, glycerol dibehenate, glycerol distearate, glycerol dipalmitate, glycerol palmitostearate, a lauroyl macrogol-32 glyceride, a stearoyl macrogol-32 glyceride, calcium steroyl lactylate, stearic acid, stearoyl alcohol, sucrose distearate, sucrose palmitate, sucrose dipalmitate, yellow wax, white wax, carnauba wax, nonionic emulsifying wax, cetyl ester wax or mixtures thereof.

14 The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 100 μg/ml.

15 The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 50 μg/ml.

16 The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 25 μg/ml.

17. The pharmaceutical composition of Claim 1, wherein the release is over an extended period of time.

18. The pharmaceutical composition of Claim 17, wherein the period of time is more than about 1 hour.

19. The pharmaceutical composition of Claim 17, wherein the period of time is more than about 2 hours.

20. The pharmaceutical composition of Claim 17, wherein the period of time is between about 2 hours and about 24 hours.

21. The pharmaceutical composition of Claim 1, wherein the solubilizer increases the solubility of the drug by at least 25% in comparison to the intrinsic aqueous solubility of the drug.

22. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.80.

23. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.90.

24. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.95.

25. The pharmaceutical composition of Claim 1 including one or more additives.

26. The pharmaceutical composition of Claim 1, wherein the solubilizer is d-α-tocopherol polyethylene glycol 1000 succinate or polyoxyl 40 hydrogenated castor oil and the release modulator is α-tocopherol succinate, glycerol dibehenate or hydroxypropylmethylcellulose.

27. The pharmaceutical composition of Claim 26, including one or more additives.

28. The pharmaceutical composition of Claim 27, wherein the solubilizer is d-α-tocopherol polyethylene glycol 1000 succinate, the release modulator is α-tocopherol succinate and the additive is polyethylene glycol.

29. The pharmaceutical composition of Claim 27, wherein the solubilizer is polyoxyl 40 hydrogenated castor oil and the release modulator is hydroxypropylmethylcellulose.

30. The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is dependent on pH.

31. The pharmaceutical composition of Claim 30, wherein the drug has a pK_a of less than or equal to about 9.0.

32. The pharmaceutical composition of Claim 30, wherein the drug is carvedilol, amiodoarone, dronederone, risperdone or ziprasidone.

33. A oral dosage form comprising:

a therapeutically effective amount of a drug;

a solubilizer; and

a release modulator;

wherein the release of the drug and solubilizer are synchronized.

34. A solid oral dosage form comprising:

a therapeutically effective amount of a drug;

a solubilizer; and

a release modulator;

wherein the release of the drug and solubilizer are synchronized.